California Department of Public Health – July 2013

Hepatitis A Public Health Investigation Guidance

Hepatitis A (HAV) is an acute, self-limiting viral illness associated with abrupt onset of fever, malaise, jaundice, anorexia, nausea, abdominal discomfort, and dark urine.

Development of clinical symptoms is highly age dependent; among older children and adults, infection is typically symptomatic with 70% presenting with jaundice. In children less than six years of age, 70% of infections are asymptomatic. Older persons and persons with chronic liver disease are more likely to have severe disease and HAV prevention in these groups is particularly vital.

Definition of immunity

Persons are considered immune if they have:

- received two doses of HAV vaccine; or
- a history of IgM or total anti-HAV positivity during or up to four months after consistent clinical illness; or
- are IgG anti-HAV positive.

Post-vaccination testing is not indicated because of the vaccine's high efficacy. Most adults will be protected within two to four weeks after one dose of vaccine.

HAV vaccine was licensed in 1995 and has been routinely recommended for children in California and other high incidence states since 1999 and children in all states since 2005. Most pre-adolescents in California are immune.

Modes of transmission

HAV is primarily transmitted via the fecal-oral route (e.g., consuming fecally contaminated foods or liquids). HAV is present in the blood and feces 10-12 days after infection. HAV is rarely transmitted by blood (e.g., via transfusion) or saliva.

Incubation period

A range of 15-50 days with a mean of 28 days.

Period of communicability

Most immunocompetent adults shed virus in the stool and are infectious from two weeks before through one week after the onset of jaundice or elevation of liver enzymes, when concentration of virus in the stool is highest. In absence of jaundice, persons should be considered infectious for two weeks before through one week after the onset of hepatitis symptoms.

HAV can be detected in the stool for <10 weeks after illness onset, particularly in infants and young children.

Clinical Description

- An acute illness with a discrete onset of any sign or symptom consistent with acute viral hepatitis (e.g., fever, headache, malaise, anorexia, nausea, vomiting, diarrhea, and abdominal pain); **and**
- **either** jaundice, or elevated serum alanine aminotransferase (ALT) **or** aspartate aminotransferase (AST) levels.

Laboratory Criteria for Diagnosis

Immunoglobulin M (IgM) antibody to HAV (anti-HAV) positive.

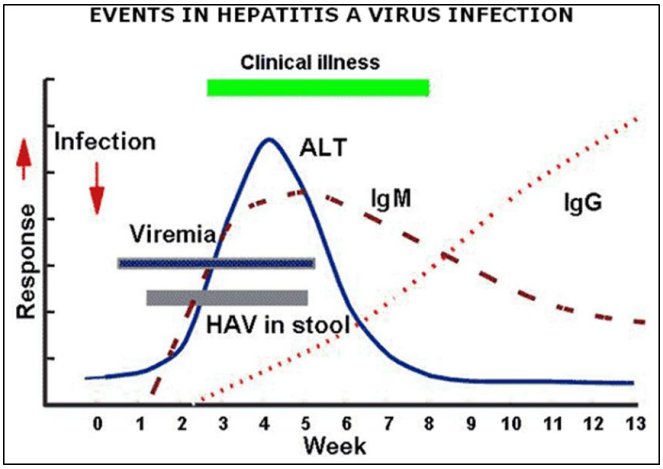
Confirmed case definition

A case who meets the clinical case definition; **and**

- is laboratory confirmed; **or**
- has an epidemiologic link with a person who has laboratory-confirmed hepatitis A (i.e., household or sexual contact with an infected person during the 15-50 days before the onset of symptoms).

Laboratory testing

IgM anti-HAV is present at the onset of illness. It usually disappears <4 months, but may persist ≥6 months. IgM anti-HAV is also occasionally detectable in adults 2 weeks after receiving HAV vaccine. IgG anti-HAV is detectable shortly after the appearance of IgM and remains for the person's lifetime.



Immunization Branch/Division of Communicable Disease Control
850 Marina Bay Parkway, Building P, 2nd Floor, Richmond, CA 94804
(510) 620-3737 www.cdph.ca.gov

False positive IgM anti-HAV
A positive IgM anti-HAV test result in a person without typical symptoms of HAV may indicate:

- asymptomatic acute HAV infection; or
- previous HAV infection with persistent IgM; or
- a false-positive test result.

IgM anti-HAV testing should be limited to persons with evidence of clinical hepatitis and should not be used as a screening tool or as part of testing panels in the workup of nonacute liver function abnormalities because of the risk of false positive test results in such persons.

If a positive IgM anti-HAV report is received on a patient without HAV symptoms or a history of recent contact with an HAV infected person, repeat IgM anti-HAV testing and a review ALT or AST levels (often >500 units/L in acute hepatitis) should be considered before recommendations are made for postexposure prophylaxis.

Pre-exposure prophylaxis (general)
HAV vaccination, given in a two dose schedule, is routinely recommended for children 12 months through 18 years of age and for persons at increased risk of HAV infection. There is no recommendation for routine HAV vaccination of food handlers or healthcare workers.

Pre-exposure prophylaxis (international travel)
Susceptible persons traveling to countries with high or intermediate HAV endemicity should be vaccinated or receive immune globulin (IG) (0.02 mL/kg) before travel. A first dose of single-antigen HAV vaccine given up to the date of departure should protect most healthy persons.

For optimal protection, elderly adults, persons with chronic liver disease or other chronic medical conditions, or immunocompromised persons traveling to an endemic country <2 weeks should receive the initial dose of vaccine and IG (separate injections at different injection sites). Travelers <1 year of age should receive IG, which will provide protection for up to three months. A list of endemic countries is available at: http://wwwn.cdc.gov/travel/yellowBookCh4-HepA.aspx#362

Combined HAV/HBV vaccine "accelerated" schedule
The first **two doses** of the combined HAV/HBV vaccine (Twinrix®) accelerated schedule provide equivalent protection to the only the **first dose** in the standard, single-antigen adult HAV vaccine series and the first two doses in the standard adult HBV vaccine series. Therefore, this schedule offers no particular benefit and CDC recommends the regular schedule when possible.

Postexposure prophylaxis (PEP)
Susceptible people exposed to HAV should receive a dose of single-antigen HAV vaccine or intramuscular IG (0.02 mL/kg) or both as soon as possible within 2 weeks of last exposure. The efficacy of Twinrix® for PEP has not been evaluated so it is not recommended for PEP.

HAV vaccine is preferred over IG for PEP in persons 1-40 years of age because the effectiveness of vaccine for PEP has been studied only in this age group and data on vaccine efficacy at older ages are limited. However, other countries recommend vaccine for PEP in people >40 years of age and there is evidence that HAV vaccine is immunogenic in older people. Therefore, CDPH suggests consideration of HAV vaccine for PEP in persons 41-59 years of age because it confers long-term immunity.

Age/years	**<1***	**1-40**	**41-59**	**60-74***
Healthy	IG	Vaccine preferred	Vaccine and/or IG	IG; vaccine if IG is in short supply
Other†	IG	IG	IG	IG
	Consider vaccine + IG for possible longer-term protection			

*When IG is unavailable or in short supply, single-antigen HAV vaccine may be used for PEP in healthy people 60-74 years of age and in infants >6 months of age.

IM IG (GamaSTAN®) is available in 2 mL and 10 mL single use vials. One source of IG is FFF Enterprises, which can be reached 24/7 at: 1-800-843-7477.

People who should receive IG for PEP
CDC recommends that the following people, regardless of age, receive IG PEP because they are at increased risk of severe HAV infection or may have a decreased immune response to vaccine. Vaccine may be given in addition to IG to potentially provide longer-term protection, but vaccine response may be limited. Clinical guidance should be obtained if patient's immune status is unclear.

- Persons with chronic liver disease (e.g., cirrhosis)
- Immunocompromised persons, including persons:
  - With HIV/AIDS;
  - Undergoing hemodialysis;
  - Who have received solid organ, bone marrow or stem cell transplants;
  - Receiving high dose steroids (>2mg/kg/day), chemotherapy, immunomodulators and/or biologic medications;† and
  - Persons who are otherwise less capable of developing a normal response to immunization.

†adalimumab (Humira), azathioprine (Imuran), etanercept (Enbrel), mercaptopurine (Purinethol), infliximab (Remicade), methotrexate (Trexall), mycophenolate mofetil (CellCept), tacrolimus (Prograf), etc.

Persons administered IG for whom HAV vaccine is also recommended for other reasons should receive a dose of vaccine simultaneously with IG.

For additional CDPH information on HAV PEP, see: http://www.cdph.ca.gov/programs/immunize/Documents/CDPH_HAV%20PEP%20Clinical%20Guidance.pdf

Close contact definition
Household and sexual contacts, drug sharers and childcare center staff/attendees. Also consider persons with other types of ongoing, close contact (e.g., regular babysitters).

Risk for HAV transmission in different settings
HAV transmission risk varies by setting. Secondary attack rates are 15-30% in households and higher rates of transmission are associated with infected children. In contrast, attack rates are low among restaurant patrons who have been exposed to infected food handlers.

Food service settings
HAV-infected food handlers should be excluded for one week after jaundice onset (or if no jaundice, during peak aminotransferase activity or symptom onset). Other potentially exposed food handlers in the same setting should be given PEP.

Because transmission to patrons is unlikely, PEP is not routinely indicated for patrons, but may be considered if, while infectious, the food handler:

- directly handled uncooked or cooked foods; and
- had diarrhea or poor hygienic practices (it should be ensured that handwashing facilities are available); and
- patrons can be identified and treated no later than two weeks after exposure (see algorithm, page3).

If repeated exposures might have occurred (e.g., in an institutional cafeteria), stronger consideration of PEP may be warranted.

In a common source outbreak, PEP is not indicated for exposed persons after cases have begun to occur because the two week period during which PEP is known to be effective will have been exceeded.

If a common source is suspected in two or more cases, the CDC Hepatitis Reference Laboratory can perform molecular typing. Contact CDPH at 510-620-3737 for more information.

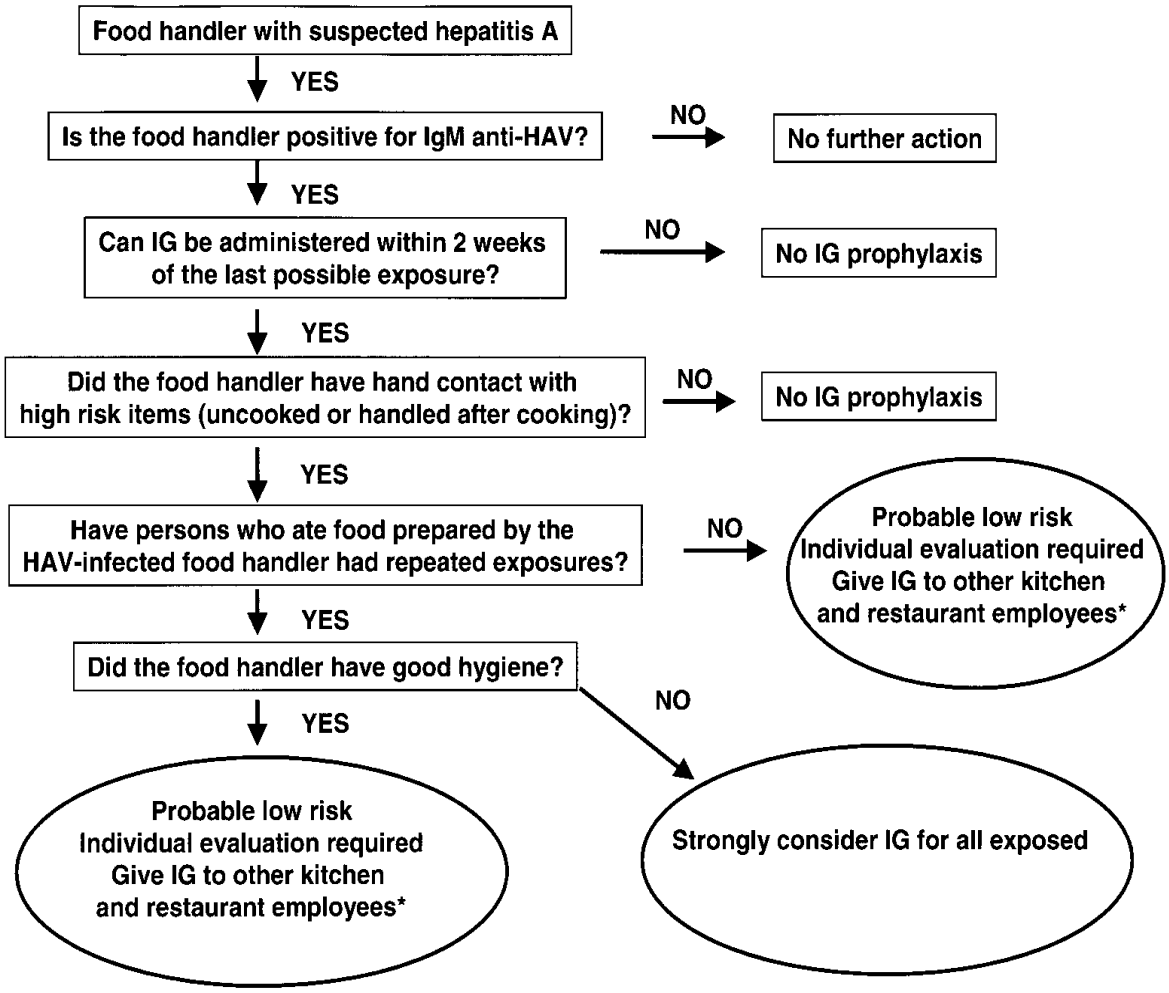
Childcare settings
HAV-infected staff and attendees should be excluded for one week after onset of jaundice (or if no jaundice, onset of symptoms. If asymptomatic, use peak aminotransferase activity).

PEP is indicated for previously unvaccinated staff/attendees if a case of HAV is diagnosed in staff/attendees or if HAV cases are diagnosed in two or more households of attendees. If children at the affected center are too old to need diapering, PEP need only be given to classroom contacts of the index patient. If HAV cases occur in $\geq$3 attendee households, PEP should be considered for members of households that have attendees in diapers.

Healthcare settings
PEP is not routinely indicated for staff who have provided care for an HAV-infected patient. When providing care for HAV-infected patients, contact precautions are recommended (in addition to standard precautions) for diapered and incontinent patients for at least one week after symptom onset. PEP is indicated for persons who have had close contact with cases if an epidemiological investigation indicates that HAV transmission has occurred among patients or between patients and staff.

Schools and other work settings
PEP is not routinely indicated when a single HAV case occurs in elementary or secondary schools or work settings other than those specified above. PEP is indicated for persons who have close contact with index cases if an epidemiological investigation indicates that HAV transmission has occurred among students at a school.

Algorithm for determining the need for PEP after exposure to food prepared by a food handler with HAV*



Hygiene assessments are subjective; a visit to the food handling area and interviews with the infected food handler, coworkers, and supervisors are often helpful. Factors to consider include the food handler's self-assessment, assessments obtained from supervisors or coworkers, whether the food handler had bowel movements (especially diarrhea) while at work, presence of medical conditions that might make hygiene more difficult to maintain, glove use, availability of functioning hand washing facilities, hygiene training, and previous assessments of sanitation practices in the facility that employs the infected food handler.

*Fiore AE. Hepatitis A Transmitted by Food. Clinical Infectious Diseases 2004; 38:705–15.